

REMARKS/ARGUMENTS

Favorable reconsideration of this application as currently amended and in light of the following discussion is respectfully requested.

Claims 1-6, 9, 15-18, 21-25, 31, 36, and 37 are currently pending. The present Amendment amends Claims 1-3, 6, 9, 15-18, 21-25, 31, and 36; cancels Claims 7, 8, 10-14, 19, 20, 26-30, and 32-35 without prejudice or disclaimer; and adds Claim 37. The changes and additions to the claims are supported by the originally filed application. No new matter has been added.

In the outstanding Office Action, the drawings were objected to because of informalities; the specification was objected to because of informalities; Claim 9 was objected to because of informalities; Claims 6-14, 27, 28, 34, and 35 were rejected under 35 U.S.C. § 102(e) as being anticipated by Song (U.S. Patent No. 6,721,299); Claims 15-18, 20, 22, 23, 26, and 29 were rejected under 35 U.S.C. § 102(e) as being anticipated by Papasakellariou (U.S. Patent No. 6,700,919); Claims 19, 24, and 30 were rejected under 35 U.S.C. § 102(b) as being anticipated by Abeda et al. ("Performance comparisons of coherent SC/DS-CDMA, MC/DS-CDMA and MC-CDMA methods in downlink broadband wireless packet transmission," herein "Abeda"); Claims 1-5 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee (Korean Patent Publication No. 010054456) in view of Sutton (U.S. Patent No. 5,805,648); Claims 21 and 31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Papasakellariou in view of Sutton; and Claims 32, 33, and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Papasakellariou in view of Sutton, and further in view of Song.

In response to the objection to the drawings, submitted herewith is a Letter Submitting Replacement Drawing Sheets along with 6 Replacement Sheets for Figs. 1 and 3-7 modified

as requested in the Office Action. Accordingly, the drawings are now believed to be compliant and no further objection on this basis is anticipated.

In response to the objection to the specification because of informalities, the specification is amended to correct the cited informalities. Accordingly, the grounds for the objection are believed to have been overcome. Therefore, it is respectfully requested that the objection to the specification be withdrawn.

In response to the objection to Claim 9 because of informalities, Claim 9 is amended to correct the cited informalities. Specifically, Claim 9 now depends from Claim 6. Accordingly, the grounds for the objection are believed to have been overcome. Therefore, it is respectfully requested that the objection to Claim 9 be withdrawn.

Initially, Applicant respectfully submits that the first path search step and the second path search step of independent Claims 1 and 6, and the first path search part and the second path search part of independent Claim 25 are neither taught nor suggested by the cited references. Similarly, Applicant respectfully submits the path search and channel estimation part of independent Claim 36 are neither taught nor suggested in the cited references.

In response to the rejection of Claims 6-14, 27, 28, 34, and 35 under 35 U.S.C. § 102(e) as being anticipated by Song, and in the spirit of moving prosecution forward for the present application, Claims 6 and 9 are amended to clarify the claimed invention and Claims 7, 8, 10-14, 27, 28, 34, and 35 are cancelled without prejudice or disclaimer.

Amended Claim 6 recites a first path search step, a first channel estimation step, a second path search step, and a second channel estimation step. It is respectfully submitted that whereas Song may mention channel estimation, it does not teach or suggest a channel estimation method comprising a first path search step, a first channel estimation step, a second path search step and a second channel estimation step. Therefore, it is respectfully

submitted that amended independent Claim 6 and dependent Claim 9 patentably define over Song.

In response to the rejection of Claims 15-18, 20, 22, 23, 26, and 29 under 35 U.S.C. § 102(e), Claims 15-18 and 23 are amended and Claims 20, 22, 26, and 29 are cancelled without prejudice or disclaimer.

Claim 15 is amended to depend from amended independent Claim 6. Claim 23 is amended to indirectly depend from amended Claim 25. Therefore, in light of the above amendments and discussion, it is respectfully requested that amended Claims 15-18 patentably define over the cited references.

In response to the rejection of Claims 19, 24, and 30 under 35 U.S.C. § 102(b), it is respectfully submitted that the rejection is rendered moot by the cancellation of Claims 19, 24, and 30.

In response to the rejection of Claims 1-5 and 25 under 35 U.S.C. § 103(a), Applicant respectfully requests reconsideration of the rejection and traverses the rejection for the reasons set forth below.

Claim 1 is directed to a path search method comprising a first path search step and a second path search step. Claim 25 is directed to a communication device comprising a first path search part and a second path search part.

Applicant respectfully submits that Lee merely proposes a “channel estimation method and apparatus” and does not teach a “path search method” comprising a first path search step and a second path search step. Further, Applicant respectfully submits that Lee does not teach a “communication device” comprising a first path search part and a second path search part. Applicant notes that Sutton is relied upon as teaching the “path search.” However, Sutton does not teach or even suggest a path search comprising a first path search and a second path search.

Therefore, Lee and Sutton, whether taken alone or in combination, fail to teach or suggest every feature recited in Applicant's claims, so that Claims 1-5 and 25 are patentably distinct over the cited references. Accordingly, Applicant respectfully traverses and requests reconsideration of the rejection based on Lee and Sutton.

In response to the rejection of Claims 21 and 31, under 35 U.S.C. § 103(a), Claims 21 and 31 are amended to depend directly or indirectly from Claim 25. Therefore, in light of the above amendments and discussion, it is respectfully requested that amended Claims 21 and 31 patentably define over the cited references.

In response to the rejection of Claims 32, 33, and 36 under 35 U.S.C. 103(a), Claim 36 is amended to clarify the claimed invention and Claims 32 and 33 are cancelled without prejudice or disclaimer.

Claim 36 recites a communication device comprising a path search and channel estimation part that carries out at least one of a path search and a channel estimation using pilot symbols of a known phase included in a signal received via a multipath propagation path and information symbols, and a feedback part that feeds back the information symbols, wherein the path search and channel estimation part recursively implements the path search and the channel estimation by repeating processes of implementing a path search using information symbols decoded after channel estimation and the pilot symbols and implementing a channel estimation using the information symbols fed back via said feedback part in accordance with a timing detected in said path search and the pilot symbols.

Applicant respectfully submits whereas Papasakellariou may propose a channel estimation that estimates a first channel impulse response for the channel using pilot data (pilot signals), and estimates a second channel, impulse response for the channel in response to the estimated information data using the pilot data (pilot signals) and the information data

(data signals), Papasakellariou does not teach or suggest recursively implementing the path search and the channel estimation as recited in claim 36.

Similarly, Sutton and Song fail to teach or suggest recursively implementing the path search and the channel estimation as recited in claim 36. To that effect, Applicant respectfully submits that “channel estimation” and “path search” may have been confused in the Office Action. It should be noted that in Papasakellariou, the “channel estimation” comprises two stages. However, in the present invention, both the “path search” and the “channel estimation” can be carried out in two stages, for example, by recursively implementing the path search and the channel estimation. Therefore, it is respectfully requested that amended independent Claim 36 patentably define over the cited references.

In order to vary the scope of protection recited in the claims, Claim 37 is added. New Claim 37 finds non-limiting support in the originally filed application, for example in Claim 6. Therefore, new Claim 37 does not introduce new matter.

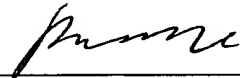
Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-6, 9, 15-18, 21-25, 31, 36, and 37 is earnestly solicited.

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Reply to Office Action of November 30, 2004

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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IN THE DRAWINGS

The attached sheet of drawings includes changes to Figs. 1 and 3-7. These sheets, which include Fig. 1 and 3-7, replace the original sheets including Figs. 1 and 3-7.

Attachment: Replacement Sheets (6)